

# ABSTRACT

## Seismic Potential of the S.W. Tobago Fault System

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On 1982/09/20 at 16:26 UTC, the largest instrumental earthquake, up to that time,  $m_b=5.2$ , to be located near Tobago occurred at shallow depth. The foreshock and aftershock activity revealed a previously unrecognised fault system, the Southern Tobago Fault System or S.W. Tobago Fault System. Prior to the occurrence of this event the seismic hazard in Tobago was considered to be quite low. The occurrence of this event demonstrated that the seismic hazard had been seriously underestimated. By making use of the locations of the 1982 sequence of earthquakes, the Southern Tobago Fault System appears to consist of a S.E - N.W trending fault made up of three segments of lengths 11 km, 15 km and 10 km. This makes possible the occurrence of an earthquake of magnitude of at least 6.5 occurring on the individual segments. Should the entire 36 km length of the fault rupture in a given event, the magnitude would be at least 7.5. Stress drops determined from selected events lie in the range 0.3-79 bars, with outliers in the range 270-672 bars. A value of 100 bars has been associated with events of  $M_L=6.8$  (Brune, 1970). Earthquakes of such magnitudes occurring along the second segment of the fault system, which is, for the most part, on land would prove devastating for the island of Tobago.

**Keywords:** Joan Lynfa Latchman; seismic potential, S.W. Tobago Fault System, fault length, magnitude, stress drop.